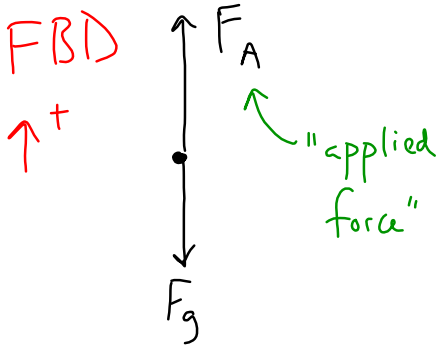
Forces Practice:

1) Picture

FBD



only acceleration in y-direction

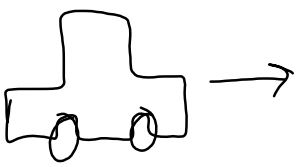
net force

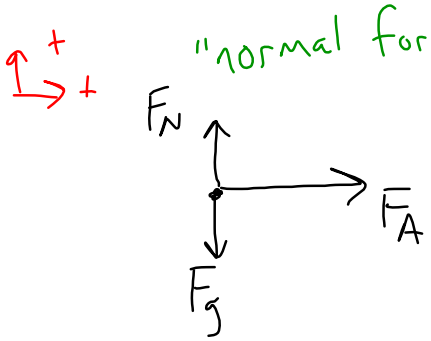
$$\sum \bar{F} = m\bar{a} \qquad m = 175\ kg \qquad \bar{a} = +0.67\ m/s$$

$$= (175kg)(+0.67 m/s^2)$$

$$= +117.25\ N$$

2)





balanced forces in y-direction

unbalanced forces in x-direction

$$\sum \bar{F} = m\bar{a} \qquad m = 1600\ kg \qquad \bar{a} = +20\ m/s^2$$

$$= (1600kg)(+20\ m/s^2)$$

$$= +32000\ N$$

Equation for weight is the same one!

$$F = ma$$

↳ this changes depending on where you are!

12) $F_E = ma_E$ $m = 88\ kg$, $a_E = 9.8\ m/s^2$

$= (88\ kg)(9.8\ m/s^2)$

$= 862.4\ N$

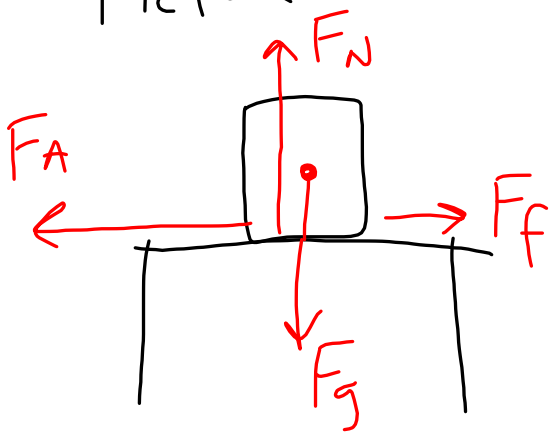
14) $F_m = ma_m$ $a_m = \left(\frac{1}{6}\right) a_E$

$= (85\ kg)(1.63\ m/s^2)$ $= \left(\frac{1}{6}\right)(9.8\ m/s^2)$

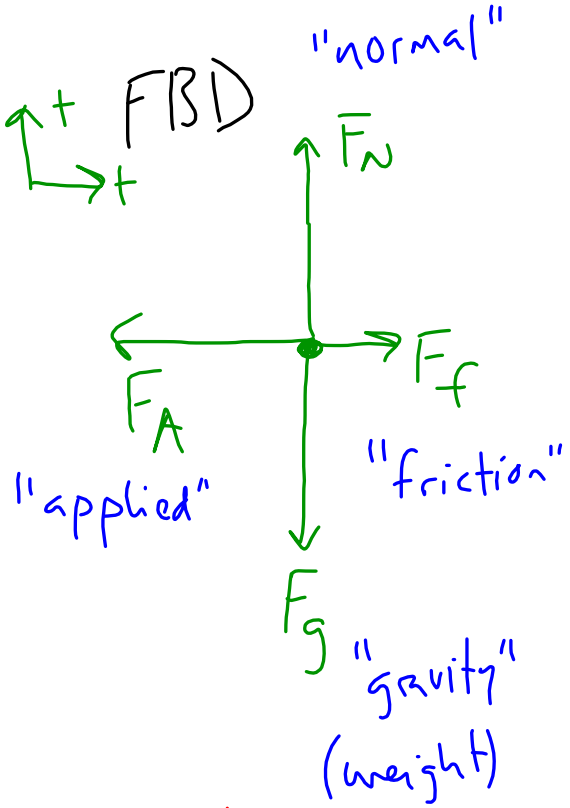
$= 138.8\ N$ $= 1.63\ m/s^2$

FBDs

1) Picture



FBD



Unbalanced force in x-direction, to the left

Balanced forces in y-direction

$$\sum F_x = -F_A + F_f$$

$$= -13\,N + 7\,N$$

$$= -6\,N$$